DCA13MR002
Conrail - Shared Assets
Derailment/Hazardous Material Release
Paulsboro, New Jersey
November 30, 2012

Hazardous Materials

Group Factual Report

ATTACHMENT 17 - MATERIAL SAFETY DATA SHEET FOR DENATURED ETHANOL

MUREX
N.A. LTD.

SECTION 1 – CHEMICAL PRODUCT & COMPANY IDENTIFICATION	
Product Name:	Alcohols N.O.S.
Company Synonyms:	Ethyl Alcohol, Anhydrous, Denatured
CAS Number:	64-17-5
Manufacturer:	Cardinal Ethanol LLC 1554 North 600 East Union City, IN 47390
Emergency Telephone Number:	Murex (972-** P I I ** CHEMTREC (1-800-** P I I **
Telephone Number for Information:	Murex (972-** P I I **

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS			
COMPONENTS / CAS NUMBER	% COMP	OSHA PEL	ACGIH TLV
Ethyl Alcohol / 64-17-5	95 - 98 %	1,000 ppm	1,000 ppm
Natural Gasoline / 8006-61-9	5 - 2 %	N/A	500 ppm -- STEL

SECTION 3 - HAZARDS IDENTIFICATION		
Routes of Entry:	Eyes:	Yes
	Ingestion:	Yes
	Inhalation:	Yes
	Skin Absorption:	Yes
Health Hazards - Acute:	Eyes:	Eye exposure at vapor concentrations of 1,000-10,000 ppm may cause temporary irritation. Continuous tearing occurs at levels greater than 15,000 ppm. Direct eye contact causes moderate to severe irritation.
Health Hazards - Acute: (continued)	Ingestion:	Ingestion first acts as stimulant, but increased volume can produce stupor. Ingestion may cause irritation to the gastrointestinal tract with nausea, vomiting and abdominal pain. Ingestion may also cause headaches, tremors, fatigue, central nervous system depression, narcosis or coma.
	Inhalation:	Excessive inhalation is irritating to the eyes and upper respiratory tract and can cause symptoms of intoxication. Aspiration into lungs may cause pulmonary edema and chemical pneumonitis. May also cause unconsciousness, coma, respiratory failure or death. Recovery from

SECTION 3 - HAZARDS IDENTIFICATION

		inhalation of concentrations less than 10,000 ppm for brief periods occurs in few minutes.
	Skin:	Denatured fuel ethanol may cause redness and/or a mild burning sensation of the skin with acute exposure to the liquid. Removes natural oils and fats from skin causing dermatitis.
Effects of Overexposure:	Acute:	Can be fatal or cause blindness if inhaled, swallowed or absorbed through skin.
	Chronic:	This material contains natural gasoline. Chronic overexposure to natural gasoline can cause damage to gastrointestinal tract, liver, kidneys and cardiovascular system and is a potential cancer hazard.
Signs and Symptoms of Exposure:	Coughing, eye and nose irritation. May cause drowsiness, dizziness, or loss of balance and coordination. Other symptoms include blurred vision, ataxia, euphoria, headache, nausea, vomiting, staggering, stupor or coma.	
Carcinogenicity:	Natural Gasoline has been classified as a Group 2B carcinogen by IARC.	
Reproductive Hazard:	Ethanol is implicated as a reproductive hazard in humans. Ethanol has demonstrated reproductive problems in animals.	
Medical Conditions Generally Aggravated by Exposure:	Asthma and other respiratory conditions	

SECTION 4 - FIRST AID MEASURES

First Aid and Emergency Procedures:	Eyes:	Flush immediately with large amounts of water for 15 minutes. Get immediate medical attention.
	Ingestion:	If conscious, induce vomiting. If breathing is difficult, give oxygen. Get immediate medical attention.
	Inhalation:	Remove to fresh air. Give artificial respiration if breathing has stopped. Get immediate medical attention.
	Skin:	Remove contaminated clothing and wash with large amounts of water for 15 minutes. Soap or mild detergent may be used. Get medical attention if necessary.

SECTION 5 - FIRE FIGHTING MEASURES

Flash Point (Method Used):	Below -5 °F (Tag open cup)	
Flammable Limits:	Upper Explosive Limit:	3.3%
	Lower Explosive Limit:	19.0%
Autoignition Temperature:	> 689 EF	
Fire & Explosion Hazards:	Vapors heavier than air may travel some distance to an ignition source and flash back. Liquid is flammable.	
Extinguishing Media:	Carbon dioxide, polar solvent foam, alcohol resistant foam, dry chemical extinguishers or large quantities of water. Do not use ordinary foam. Water spray may be ineffective in extinguishing large fires, but useful to dilute and flush small spills.	
Special Firefighting Procedures:	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Use water spray to cool equipment and disperse vapors. Water is not effective until alcohol contains approximately 80% water.	

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures:	Eliminate all ignition sources and evacuate area. Wear approved respirator. Flush spill with water to decrease the fire hazard. Small spill can be taken up with sand, vermiculite or other absorbent material for later disposal. Large spill should be contained and collected for appropriate disposal. Notify safety personnel of leaks or spills. Provide explosion proof ventilation in closed areas.

SECTION 7 - HANDLING AND STORAGE

Handling and Storage Requirements:	Store in cool areas in tightly closed containers. Provide adequate ventilation. Locate storage area well away from heat, sparks, open flame and other fire hazards. Electrically bond and ground metal containers when transferring. Avoid incompatible materials.
Other Precautions:	Post storage areas to prevent smoking or striking of matches. Do not store near oxidizing agents. Use explosion proof electrical equipment and storage and non- sparking tools. Ground electrical equipment and storage and handling equipment to prevent static charges. Storage and use conditions must be suitable for an OSHA Class 1B flammable material. Launder contaminated clothes before reuse. Close unused containers. Use grounding during transfer between containers. Transportation data per 49 CFR 172.101-2.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory Protection:	Wear appropriate NIOSH/MSHA approved respirator (cartridge units are not adequate) or air line respirator when exposure limits are exceeded.	
Ventilation:	Local Exhaust:	As necessary to meet PEL or TLV limits
	Mechanical:	Use non-sparking equipment
	Special:	N/A (N/A = not applicable)
	Other:	Explosion-proof equipment
Protective Gloves:	Rubber, neoprene or nitrile equivalent and/or chemically resistant	
Eye Protection:	Use safety goggles, full face mask or glasses with side shields when appropriate.	
Other Protective Clothing or Equipment:	Eyewash station and safety shower should be available in work areas. Use general splash protection when appropriate. Use non-sparking tools or explosion-proof equipment to protect against an OSHA Class 1B flammable liquid.	
Work/Hygienic Practices:	Comply with all Bureau of Alcohol, Tobacco and Firearms regulations pertaining to the production, procurement and use of ethyl alcohol.	
Skin Protection:	Use chemically resistant outer garments	

SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

Appearance and Odor:	Colorless liquid with mild characteristic odor
Physical Description:	Liquid
Vapor Pressure (mmHg): @ 20 °C	45
Vapor Density (Air =1): @ 78 °C	1.6
Boiling Point:	165 - 175 °F
Melting Point:	N/A
Solubility in Water:	Complete
Evaporation Rate (butyl acetate = 1):	3.2
Percent, Volatile by Volume:	100
Specific Gravity (water = 1) (@ 60 °F):	0.789
Empirical Formula:	C_2H_5OH / H_3CH_2OH

SECTION 10 - STABILITY & REACTIVITY

Stability:	Stable
Conditions to Avoid:	Avoid heat, sparks, open flames, excessive storage temperatures and/or open containers
Incompatibility (Materials to Avoid):	Strong acids, oxidizing agents, peroxides, alkali metals, ammonia
Hazardous Decomposition or Byproducts:	Aldehydes, carbon monoxide, carbon dioxide. Unknown hydrocarbons may result from low oxygen combustion.
Hazardous Polymerization:	Will not occur
Decomposition Products:	Carbon dioxide, carbon monoxide

SECTION 11 - TOXICOLOGICAL INFORMATION

Product Toxicology:	Inhalation Toxicity:	No information available on denatured fuel ethanol per se.
	Dermal Toxicity:	No information available on denatured fuel ethanol per se.
	Eye Irritation:	No information available on denatured fuel ethanol per se.
	Oral Toxicity:	LD_{50} 0.5 to 5 g/kg

SECTION 12 - ECOLOGICAL INFORMATION

This product contains 2-5% natural gasoline. Natural gasoline is known to cause moderate toxicity in fish.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Method:	Do not allow to enter sewers where vapors may be ignited. Burn in a furnace where permitted by appropriate federal, state and local regulations or disposal in a site designated for hazardous materials.

SECTION 14 - TRANSPORT INFORMATION

Shipping Name:	Alcohols N.O.S.
DOT Hazard Class:	3
DOT Identification No:	UN 1987
Label:	Flammable liquid

SECTION 15 - REGULATORY INFORMATION

Comply with all Bureau of Alcohol, Tobacco and Firearms regulations pertaining to the production, procurement and use of ethyl alcohol.

If a company's product contains benzene at levels above 0.1%, the company will be subject to supplier notification requirements under Section 313 of the Superfund Amendments and Reauthorization Act (SARA), 40 CFR part 370 subpart C and hazardous substance release reporting under Section 302 of the Comprehensive Environmental Response and Conservation Act where the quantity of benzene released in a 24-hour period exceeds the reportable quantity (RQ).

This product is also subject to MSDS and Chemical Inventory Reporting under Sections 311 and 312 of SARA.

SECTION 16 - OTHER INFORMATION

For more information contact:

Cardinal Ethanol, LLC
1554 North 600 East
Union City, IN 47390